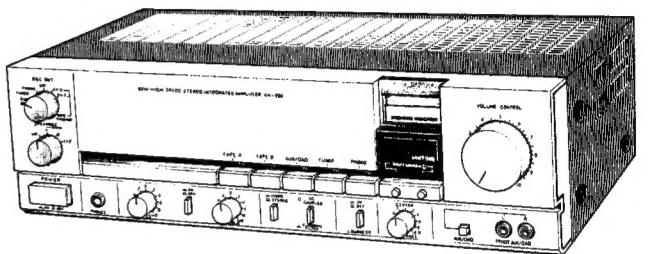


NEW HIGH SPEED STEREO  
INTEGRATED AMPLIFIER

# KA-990

INSTRUCTION MANUAL



KENWOOD

PRINTED IN JAPAN B50-4534-00 (U,M,UE,H,X) (T) (E)  
ON/354 D12345/454

1311

# Before applying power

## Important!

### U.S.A. and Canada

Units shipped to the U.S.A. and Canada are designed for operation on 120 volts AC only. These units are not equipped with AC voltage selector switch and the discussion of such a switch that follows should be disregarded.

### All other countries

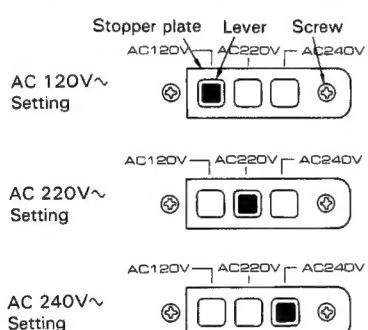
Units shipped to countries other than the U.S.A. and Canada are equipped with an AC voltage selector switch on the rear panel. Refer to the following paragraph for the proper setting of this switch.

### AC voltage selection

This unit operates on 120 volts, 220 volts or 240 volts AC. The AC voltage selector switch on the rear panel is set to the voltage that prevails in the area to which the unit is shipped. Before connecting the power cord to your AC outlet, make sure that the setting position of this switch matches your line voltage. If not, it must be set to your voltage in accordance with the following direction.

#### Note:

Our warranty does not cover damage caused by excessive line voltage due to improper setting of the AC voltage selector switch.



1. Remove screws and stopper plate.
2. Slide levers to your line voltage.
3. Lock levers with stopper plate and screws.

AC voltage selector switch

### For United Kingdom

The mains plug must be removed from the wall socket prior to any internal examination.

### Important

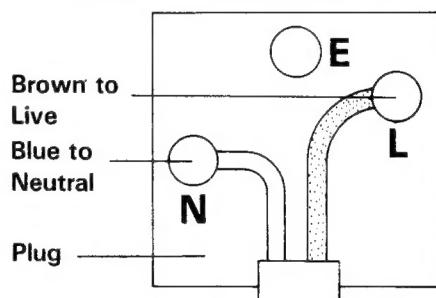
The wires in this mains lead are coloured in accordance with the following code:

Blue ..... Neutral  
Brown ..... Live

The wires in this mains lead must be connected to the terminals in the plug as follows:

#### Wire Colour

Blue ..... N or Black  
Brown ..... L or Red



#### Notes:

- 1) If a 13-amp plug is used, this must be fitted with a 5-amp fuse.
- 2) If a 3-pin plug with earthing contact is used, no wire must be connected to the E terminal.

## WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

## Safety precautions

### CAUTION

RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure; that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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## For your records

Record the serial number, found on the back of the unit, in the spaces designated on the warranty card, and in the space provided below. Refer to the model and serial numbers whenever you call upon your dealer for information or service on this product.

Model KA-990 Serial number \_\_\_\_\_

## Before operation

### Safety precautions

Never remove the case. If the internal parts are touched, accidentally, a serious electric shock might occur.

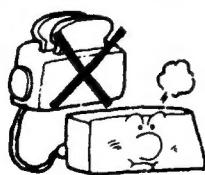


Never touch internal parts.

If a metal object, such as a hair pin or a needle, comes into contact with the power socket on the rear panel, a dangerous electric shock may result. For families with children, never permit children to put anything, especially metal, inside this unit.

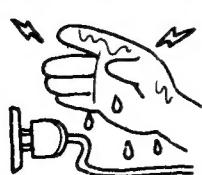


Do not connect other audio equipment with a power consumption larger than that specified to the AC outlet on the rear panel. Never connect other electrical appliances, such as an iron or toaster.



Never connect other electrical appliances.

Touching the power plug when your hands are wet may result in a serious electric shock.



Never touch with wet hands.

## Unpacking

Unpack the unit carefully and make sure that all accessories are put aside so they will not be lost.

Examine the unit for any possibility of shipping damage. If your unit is damaged or fails to operate, notify your dealer immediately. If your unit was shipped to you directly, notify the shipping company without delay. Only the consignee (the person or company receiving the unit) can file a claim against the carrier for shipping damage.

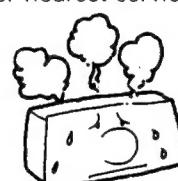
We recommend that you retain the original carton and packing materials for use should you transport or ship the unit in the future.



Never pull or stretch the cord.

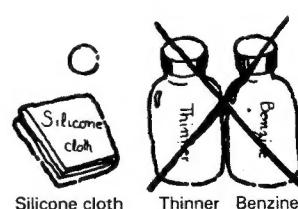
### In case of abnormal smell

If an abnormal smell or smoke is detected, immediately turn the power OFF and pull out the power cord. Contact your dealer or nearest service station.



### Cleaning

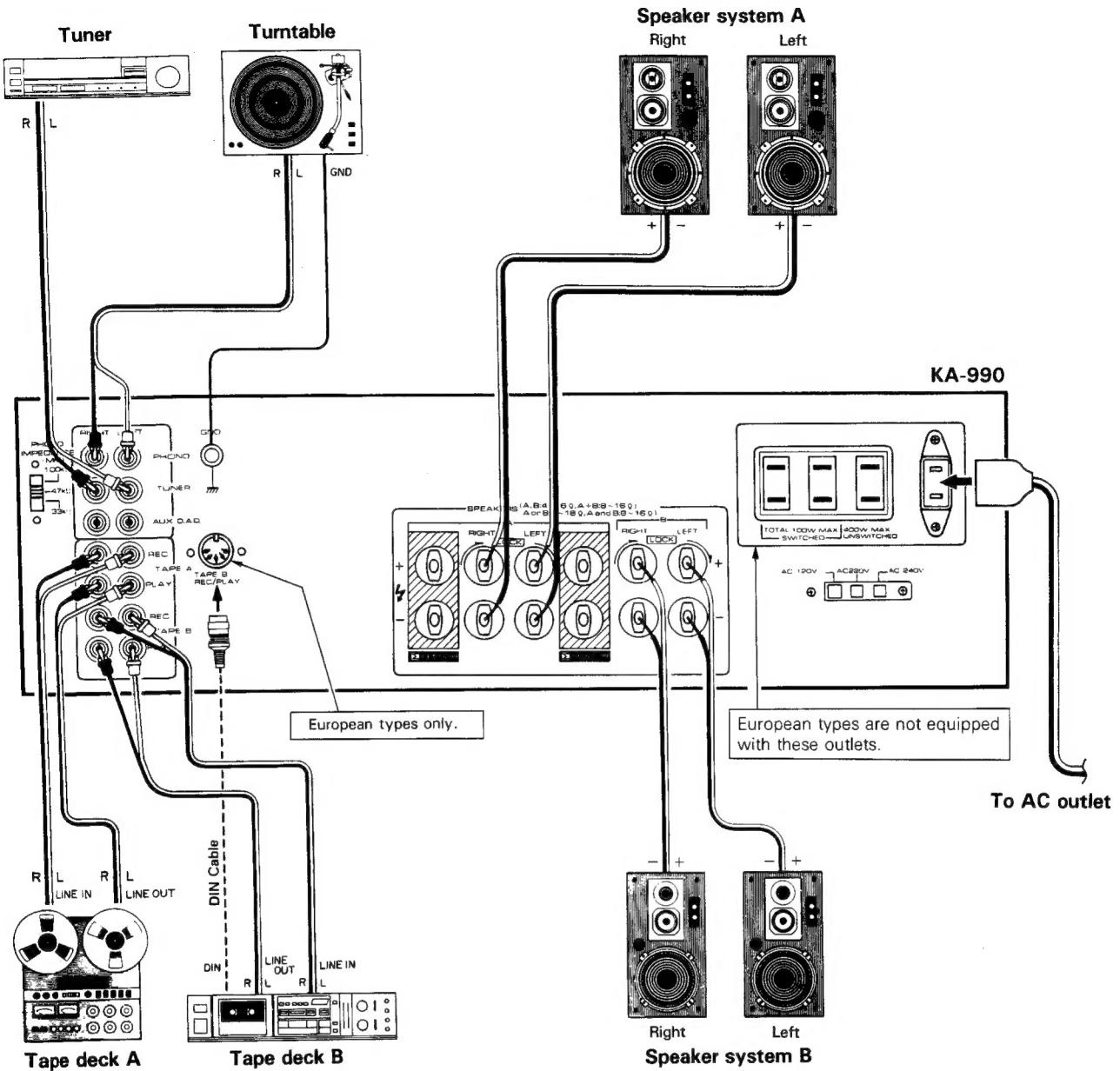
Do not use volatile solvents such as alcohol, paint thinner, gasoline, benzine, etc. to clean the cabinet. Use a silicone cloth or a clean dry cloth.



### Installation precautions

- Avoid locations subject to direct sunlight.
- Avoid high or low temperature extremes.
- Keep the unit away from heat radiating sources.
- Choose a location that is relatively free of vibration or excessive dust.
- Make sure power is off before making any system connections.

# System connections



## Speakers

This amplifier has two pairs of speaker terminals, SPEAKERS A and SPEAKERS B.

### Connecting one speaker system

Connect speakers rated at 4 ohms or more to the SPEAKERS A terminals.

Although ordinary speaker cords can be connected to the SPEAKERS A terminals, the  $\Sigma$  drive system will reproduce better sound with the  $\Sigma$  cords connected to the SPEAKERS A terminals.

### Connecting two speaker systems

To connect an additional pair of speakers, use the B terminals. In this case, each speaker must be rated a 8 ohms or more.

### Connecting an ordinary speaker system

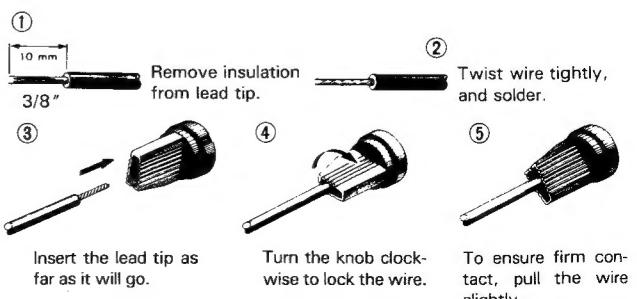
Connect the left speaker to the LEFT SPEAKERS A or B terminals and the right speaker to the RIGHT SPEAKERS A or B terminals.

At this time, be sure to connect the (+) terminals of the

speakers to the (+) terminals of the amplifier and (-) terminals in the same manner respectively.

#### Notes:

1. The tips of the connected wires should not touch adjacent terminals.
2. If the SPEAKERS A terminals are connected with ordinary cords, connect only inner terminals but not  $\Sigma$  SENSOR (shaded) terminals.



### Connecting speaker cords

### **Warning!**

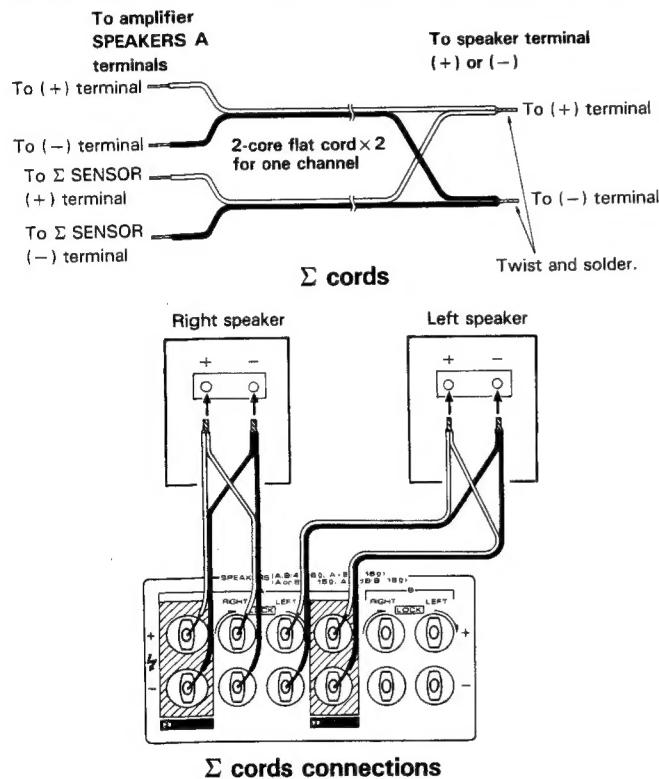
Particular attention must be given to making good electrical contact at the amplifier-output and speaker terminals. Poor or loose connections can cause sparking or burning at the terminals because of the very high power that the amplifier can deliver.

### **Connecting Σ cords**

Prepare the Σ cords as shown in figure. The figure "Σ cords" below shows one channel cords for Σ drive. Two of these cords are needed for both channels. Connect each end of the Σ cords to the correct terminal of the amplifier and speaker as shown in the figure "Σ cords connections".

#### **Note:**

Never connect the amplifier end of the Σ cords to same polarity terminals (Σ SENSOR (+) to (+) terminal, or Σ SENSOR (-) to (-) terminal).



### **Turntable**

The PHONO jacks of the amplifier can accept a turntable with either an MM or MC type phono-cartridge.

Your stereo turntable has a pair of audio cables that is terminated with phono plugs. Plug the left channel plug into the LEFT and the right channel plug into the RIGHT PHONO jacks. If the turntable has a ground wire, connect it to the unit's GND terminal to avoid hum.

### **Tuner**

Use the TUNER terminals for connection to an FM stereo or AM-FM stereo tuner.

Connect the left channel of the tuner to the LEFT TUNER input jack and the right channel of the tuner to the RIGHT TUNER input jack.

### **AUX/D.A.D.**

Additional AUX/D.A.D. jacks (FRONT AUX/D.A.D.) are equipped with this unit on the front panel to facilitate an operation of an equipment to be connected to these jacks. Selecting the source equipments connected to the AUX/

D.A.D. jacks on the rear/front panel is performed with the AUX/D.A.D. (REAR/ FRONT) switch. To these jacks, high-level signal sources such as, tuner, extra tape decks, TV, VCR sound outputs, mic preamps, etc. can be connected.

### **Ground**

For maximum safety and minimum interference connect the GND terminal to a good earth ground if practicable. A good earth ground is a cold water pipe or a metal stake driven into moist earth. However, never use a gas pipe for this purpose.

### **Tape decks**

If only one tape deck is to be connected to the system it is recommended that it be connected to the jacks marked TAPE A. Tape deck input and output cables are normally terminated with phono plugs.

### **Playback**

Plug the left and right output cables of the tape deck into the LEFT and RIGHT TAPE A PLAY jacks.

### **Record**

Plug the left and right input cables of the tape deck into the LEFT and RIGHT TAPE A REC jacks.

### **DIN connector (European types only)**

If your tape deck is equipped with a DIN connector, connect it to the TAPE B REC/PLAY connector with the DIN connecting cord. The DIN connection makes both input and output connections with a single cord, and the signal must be controlled with the REC OUT switch and TAPE B switch on the front panel.

#### **Note:**

If connections are made with a DIN connecting cord, the TAPE B PLAY and REC jacks should not be used.

### **Second tape deck**

Plug the input and output cables from the second tape deck into the REC and PLAY jacks marked TAPE B.

### **AC outlets (Except European models)**

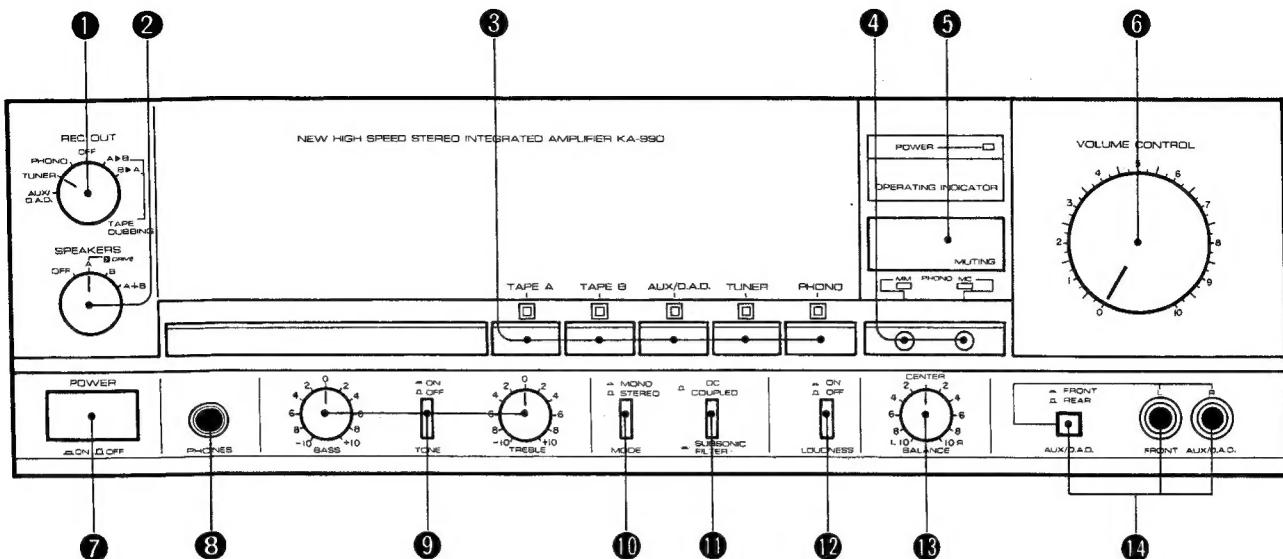
The AC outlets on the rear panel of the unit may be used to supply power to other components in the system, such as turntables, tape decks, etc. Never connect equipment whose power consumption exceeds the maximum value shown at each outlet.

1. SWITCHED outlets: These outlets supply power only when the unit is turned on. The maximum total capacity (both outlets) is 100 watts.
2. UNSWITCHED outlet: The outlet provides power when the unit is plugged into an active AC wall outlet, regardless of the setting of the POWER switch. The maximum capacity is 400 watts.

### **PHONO IMPEDANCE (MM) selector switch**

When using a moving magnet cartridge, set this switch to the appropriate position according to the impedance of cartridge.

# Controls, indicators and connectors



## ① REC OUT switch

This switch is designed to record from a source other than that selected by the input selector switches.

**OFF** — With this setting no signal is output from the REC jacks; the source signal comes out of the speakers without the slight degradation that would take place if a tape deck was connected.

Keep this position when not recording.

**PHONO** — This setting permits the recording of the record played on the turntable connected to the PHONO jacks.

**TUNER** — This setting makes the tuner the program source for recording.

**AUX/D.A.D.** — This setting permits a recording of the program source connected to the AUX/D.A.D. jacks.

**TAPE DUBBING A▶B** — When dubbing from the tape deck connected to the TAPE A jacks to the tape deck connected to the TAPE B jacks.

**TAPE DUBBING B▶A** — When dubbing from the tape deck connected to the TAPE B jacks to the tape deck connected to the TAPE A jacks.

## ② SPEAKERS switch

**OFF** — This position disconnects the speakers to permit private listening with headphones.

**Σ DRIVE A** — Activates speakers connected to the SPEAKERS A terminals on the rear panel. This setting can be used whether the speakers are connected with Σ cables or with conventional 2-lead cables.

**B** — Activates speakers connected to the SPEAKERS B terminals on the rear panel.

**A+B** — Activates speakers connected to the SPEAKERS A and B terminals simultaneously.

In this setting, however, the speakers connected to the SPEAKERS A terminals do not perform in the Σ drive mode even though they are connected with Σ cables.

## ③ Input selector switches

**TAPE A** — To monitor a recording in progress or to playback a tape from a tape deck connected to the TAPE A jacks.

**TAPE B** — To monitor a recording in progress or to playback a tape from a tape deck connected to the TAPE B jacks.

**AUX/D.A.D.** — Selects the program source connected to the AUX/D.A.D. jacks.

**TUNER** — Selects the tuner connected to the TUNER jacks.

**PHONO** — Selects the program source played on the turntable.

### Note:

When all the input selectors are in their OFF positions with the power on, no input selector indicators light. Press the desired selector switch to set source.

## ④ Cartridge selector switch (MM, MC)

**MM** — Push when using MM (moving magnet) and high-output MC (moving coil) cartridges.

**MC** — Push when using MC cartridges.

## ⑤ MUTING switch

Pressing this switch cuts off the sound output and puts out the light above the switch. It is useful for preventing loud clicks or thumps when the stylus is placed on a record or to reduce the volume for same reason, such as answering the telephone. To release muting, press this switch again.

## ⑥ VOLUME control

This control adjusts left- and right-channel volume simultaneously. Set it for the desired listening level.

## ⑦ POWER switch

Press this switch to turn on the power. To turn the power off, press the switch again to set it to the out position.

## ⑧ PHONES jack

Plug stereo headphones into this jack for private listening. The speakers are silenced when the SPEAKERS switch is set to OFF.

## ⑨ Tone controls

**TONE switch** — Setting this switch to ON inserts the tone control circuit into the signal-path.

This permits adjustment of tone by turning the BASS and/or TREBLE controls. To obtain flat response, push to release the switch, OFF setting.

**BASS** — Turning this control clockwise will increase bass response. Turning it counterclockwise will decrease the bass response. The "0" setting provides a flat bass response.

**TREBLE** — Turning this control clockwise will increase the high-frequency response. Turning it counterclockwise will decrease the high-frequency response. The "0" setting provides a flat high-frequency response.

## ⑩ MODE switch

**STEREO** — This provides stereophonic reproduction of any stereo program source. The left channel is heard from the left speaker, and the right channel is heard from the right speaker.

**MONO** — Monophonic reproduction. The left and right channels are mixed together and heard from both speakers.

## ⑪ DC COUPLED/SUBSONIC FILTER switch

**DC COUPLED** — With the switch in this setting, no capacitor is coupled in the signal path from the TUNER, AUX/D.A.D., and TAPE PLAY jacks to the SPEAKERS terminals so that the frequency response is perfectly flat. Use this setting to reproduce program sources containing ultra low frequencies.

**SUBSONIC FILTER** — With the switch in this setting, signals below 18 Hz are attenuated at the rate of 6 dB per octave. Although such signals are inaudible, they can cause intermodulation distortion components in the audible range. It is recommended that this switch be depressed at all times, even if no turntable rumble is apparent.

## ⑫ LOUDNESS switch

**ON** — Bass notes are boosted at low listening levels. This precisely offsets a characteristic of human hearing whereby we are less sensitive to bass notes at very low listening levels.

**OFF** — The low-level bass boost is removed.

## ⑬ BALANCE control

This control permits balancing of the left and right channels when an imbalance exists from the sound source, or to correct acoustic imbalance due to room conditions. Turn it to the left from the CENTER position to boost the left channel; turn it to the right of CENTER to raise the level of the right channel.

## ⑭ FRONT AUX/D.A.D. jacks and AUX/D.A.D.

### (FRONT/REAR) switch

**FRONT AUX/D.A.D. jacks** — Temporarily used high-level signal sources such as, tuner, extra tape decks, TV, VCR sound outputs, mic preamps, etc. are connected to these jacks.

**AUX/D.A.D. switch** — Pressing this switch selects source equipments connected to the AUX/D.A.D. jacks on the front or rear panel.

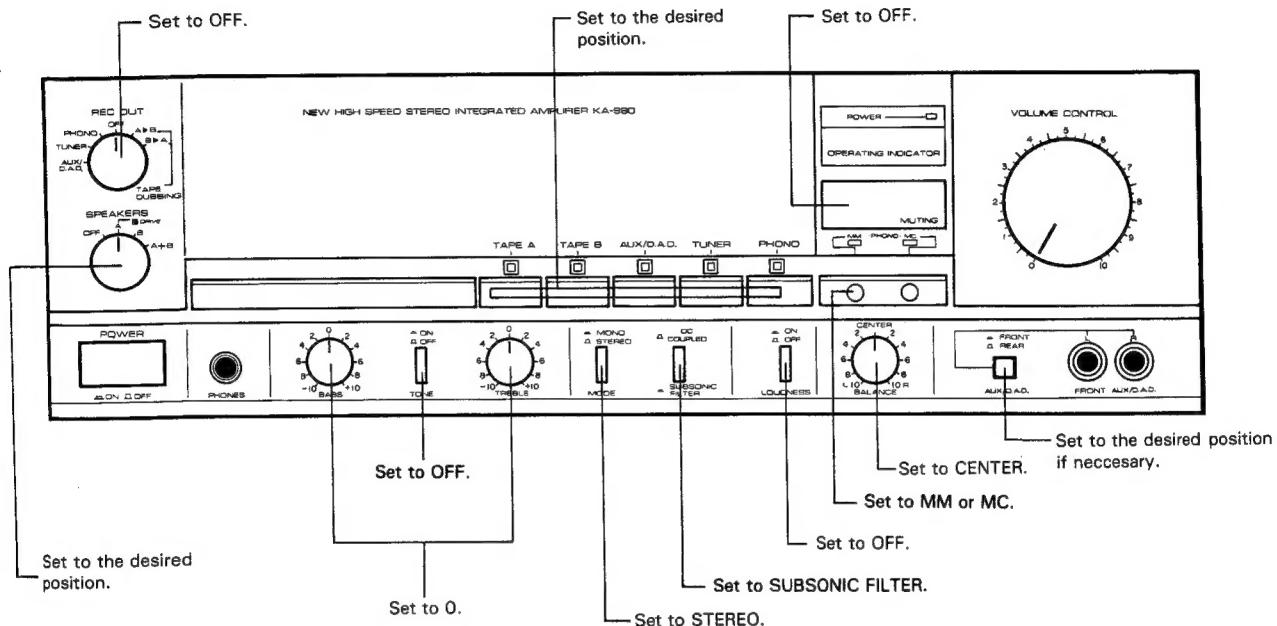
### Thermal protector

This unit employs the thermal protector circuit which automatically shuts off the power or fades out the sound if the temperature inside the amplifier becomes unusually high. The protector automatically restores the power when the temperature drops to the normal level and the cause of the unusual temperature rise must be removed before the power is restored. Unusually high temperatures may be caused in poor ventilation condition or by a shorted output circuit.

# Operating instructions

## Prior to operation

It is recommended that rarely used controls and switches be preset in accordance with your preference in order to simplify operation. Once these controls and switches have been preset, normal operation is simply turning on the POWER switch and selecting the desired program source by depressing one of the input selector switches.



## Tuner

- With your tuner connected to the TUNER jacks, press the TUNER input selector switch so that the corresponding indicator will go on.
- Tune to the desired station.
- Adjust the volume and/or tone controls for your preference.

## Turntable

- Depress the MUTING switch to temporarily reduce the output volume level.
- With your turntable connected to the PHONO jacks, press the PHONO input selector switch so that the corresponding indicator will go on.
- According to the type of phono-cartridge used, set the cartridge selector switch.
- Press the MUTING switch again to release the muting function.
- Adjust the volume and/or tone controls for your preference.

## AUX/D.A.D.

- With your additional program source connected to the AUX/D.A.D. jacks (on the front/rear panel), press the AUX/D.A.D. input selector switch so that the corresponding indicator will go on.
- Operate the equipment connected to the AUX/D.A.D. jacks.
- Adjust the volume and/or tone controls for your preference.

## Tape decks

### Tape playback

- Select the tape deck connected to the TAPE A and/or B jacks with the input selector switch so that the indicator corresponding to the desired tape deck (A or B) goes on.
- Operate the tape deck to playback your recorded tape.
- Adjust the volume and/or tone controls for you preference.

### Recording (with one tape deck)

- Set the REC OUT switch to PHONO, TUNER, or AUX/D.A.D. in accordance with the desired source.
- Set up the program source component for operation and set up your tape deck for recording.
- Set recording levels with the controls on your tape deck. The controls other than the REC OUT switch on the amplifier do not affect the signal output to the tape deck.

### Recording (with two tape decks)

- Connect two tape decks to the TAPE A and TAPE B jacks.
- Set the REC OUT switch to PHONO, TUNER, or AUX/D.A.D. in accordance with the desired source.
- Set up your two tape decks for recording.
- Recording levels should be set using controls on the individual tape decks.

## Monitoring

If your tape deck is equipped with three heads, you can compare the sound quality of the recording in progress with that of the program source; the source sound can be heard by depressing the input selector switch (PHONO, TUNER or AUX/D.A.D.) and the recorded sound can be heard by depressing the input selector switch (TAPE A or TAPE B).

## Tape-to-tape dubbing

When two tape decks are connected to the TAPE A and TAPE B jacks, tape recordings may be duplicated easily using one tape deck to play the prerecorded tape and the other tape deck to record the copy. Set the REC OUT switch as follows:

**TAPE DUBBING A ▶ B** — To record a copy on tape deck B from a tape played on tape deck A.

**TAPE DUBBING B ▶ A** — To record a copy on tape deck A from a tape played on tape deck B.

### Note:

The settings of the input selector switches do not affect dubbing. Adjust the recording level on the deck that is making the copy using that deck's operating controls. Start both decks (play and record) simultaneously. By using a three-head tape deck for the copy, monitoring is possible by depressing the TAPE A or TAPE B input selector switch. At this time, be sure not to depress both TAPE input selector switches simultaneously.

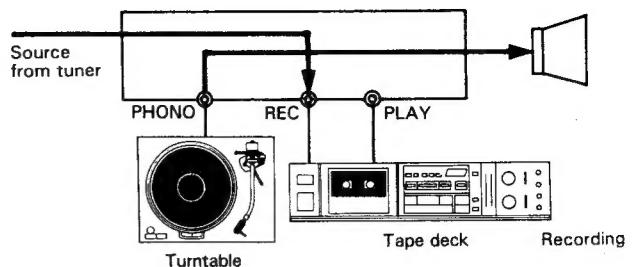
## REC OUT operation

The setting of this switch to PHONO, TUNER, or AUX/D.A.D. directly connects the tape deck to the source signals; the desired source signal for the recording is fed to the TAPE REC jacks regardless of the setting of the input selector switches.

By setting this switch to OFF with a tape deck connected, the tape deck REC connection is isolated from the amplifier's signal path, therefore, the source signals are not affected by tape deck's impedance. In this respect, set this switch to OFF when not recording.

## Recording of AM/FM broadcasts while listening to records

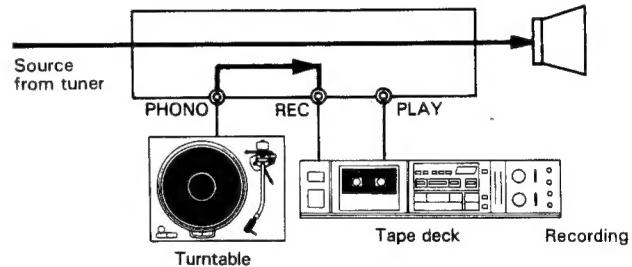
1. Press the PHONO input selector switch.
2. Operate the turntable.
3. Set the REC OUT switch to TUNER and receive the AM/FM broadcast.
4. Operate the tape deck to record the AM/FM broadcast. Adjust the recording level with the recording level controls of the tape deck.
5. To listen to the AM/FM broadcast, simply press the TUNER input selector switch. The recording of the AM/FM broadcast will continue.



## Recording of a broadcast while listening to records

## Recording of records while listening to an AM/FM broadcast

1. Press the TUNER input selector switch.
2. Operate the tuner.
3. Set the REC OUT switch to PHONO and operate the turntable.
4. Operate the tape deck to record the record. Adjust the recording level with the recording level controls of the tape deck.
5. To listen to the record, simply press the PHONO input selector switch. The recording of the record will continue.



## Recording of records while listening to a broadcast

## Using as a power amplifier

This unit can also be used as a power amplifier of one-volt input sensitivity.

The operating procedure is as follows:

1. Set the input selector switch to AUX/D.A.D..
2. Set controls and switches, such as tone controls, filters, loudness, etc., to the designated settings in order to obtain the flat frequency response.
3. Set the VOLUME CONTROL to the "5" position.
4. Turn the POWER switch on after completion of connections from the external source to the AUX/D.A.D. jacks.

## In case of difficulty

If your unit should not perform as expected, consult the table below to see if the problem can be corrected before seeking help from your dealer or service representative.

<b>AM, FM, PHONO or Tape playback</b>	<b>Cause</b>	<b>Remedy</b>
Power on but no sound.	a) Power cord not plugged in. b) Poor connection at wall outlet. Power outlet inactive.  c) VOLUME CONTROL set fully counterclockwise.	a) Check plug contact. b) Check outlet using a lamp or other appliance (outlet may be controlled by a wall switch). c) Set the control to your preference.
No sound from left or right.	a) Speaker cords disconnected. b) Speakers switched off. c) No input selector switch is in use.	a) Check speaker connections. b) Check speaker switch. c) Press one of the selector switches to select the desired program.
Sound from left or right, but not both.	a) Poor speaker connections.  b) Defective speaker.  c) BALANCE control set to one extreme or the other.	a) Check connections at both ends of speaker cord.  b) Reverse speakers, if problem stays with speaker have speaker checked.  c) Check BALANCE control setting.
<b>PHONO playback only</b>	<b>Cause</b>	<b>Remedy</b>
No sound from both or one speaker.	Turntable output disconnected.	Check phono cables.
Loud hum drowns out sound.	Poor ground connection at phono cable connections.	Check phono plugs, particularly outershell connections.
Low background hum.	Hum Picked up in turntable or turntable cables.	Keep cables away from power cords. Twist left and right cables together. Reverse AC plug of turntable. Connect ground wire between turntable and GND connector.
Background buzz.	TV signal picked up by phono cable (especially near transmitter).	Route phono cables to minimize buzz.
Howling noise at maximum volume settings.	Acoustic pickup from speaker.	Increase distance between speaker and turntable. Choose speaker locations carefully. Check turntable suspension.

# Specifications

## IHF

### Power Amplifier Section

#### Power Output

105 watts\* per channel minimum RMS, both channels driven at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.005% total harmonic distortion.

#### Both Channels Driven into

8 ohms at 1 kHz ..... 127 W

#### Dynamic Power Output into

8 ohms ..... 170 W

#### Total Harmonic Distortion

(20 Hz to 20,000 Hz)

AUX/D.A.D. input to  
SPEAKER output ..... 0.005% at rated power  
into 8 ohms  
0.005% at 1/2 rated power  
into 8 ohms

#### Intermodulation Distortion

(60 Hz:7 kHz = 4:1) ..... 0.005% at rated power  
into 8 ohms

Damping Factor ..... 1,000, at 100 Hz

#### Transient Response

Rise Time ..... 1.7  $\mu$ s

Slew Rate .....  $\pm 100$  V/ $\mu$ s

#### Frequency Response

DC COUPLED at ON ..... DC to 200 kHz,  
+0 dB, -3 dB

DC COUPLED at OFF ..... 18 Hz to 200 kHz,  
+0 dB, -3 dB

Speaker Impedance ..... Accept 4 ohms to 16 ohms

#### Input Sensitivity/Impedance

Phono MM ..... 2.5 mV/33 k ohms, 47 k ohms  
and 100 k ohms

Phono MC ..... 0.2 mV/100 ohms

Tuner, AUX/D.A.D., Tape ..... 150 mV/47 k ohms

#### Signal-to-Noise Ratio (IHF. A)

Phono MM ..... 88 dB for 2.5 mV input  
94 dB for 5.0 mV input  
100 dB for 10 mV input

Phono MC ..... 69 dB for 0.25 mV input  
75 dB for 0.5 mV input

Tuner, AUX/D.A.D., Tape ..... 107 dB for 150 mV input

#### Maximum Input Level for Phono

MM ..... 240 mV (RMS), T.H.D. 0.005%  
at 1,000 Hz

MC ..... 18 mV (RMS), T.H.D. 0.005%  
at 1,000 Hz

#### Output Level/Impedance

Tape REC (Pin) ..... 150 mV/330 ohms

Frequency Response for Phono ..... RIAA standard curve  $\pm 0.3$  dB  
(20 Hz to 20,000 Hz)

#### Tone Control

Bass .....  $\pm 10$  dB at 100 Hz

Treble .....  $\pm 10$  dB at 10 kHz

#### Loudness Control

(at -30 dB VOLUME Level) ..... +10 dB at 100 Hz

Subsonic Filter ..... 18 Hz, 6 dB/oct

## General

Power Consumption ..... 700 W (8 ohms at rated power)

AC Outlets ..... Switched 2, Unswitched 1

Dimensions ..... W: 440 mm (17-5/16")  
H: 143 mm (5-5/8")  
D: 383 mm (15-3/32")

Weight (Net) ..... 10.7 kg (23.5 lb)

\* Measured pursuant to Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifier in U.S.A.

#### Note:

We follow a policy of continuous advancements in development. For this reason specifications may be changed without notice.

## IEC

### Power Amplifier Section

#### Rated Power Output

8 ohms at 20 Hz to 20,000 Hz

no more than 0.005% THD (FTC) ..... 105 W + 105 W

4 ohms at 63 Hz to 12.5 kHz

no more than 0.7% THD (IEC) ..... 120 W + 120 W

#### Total Harmonic Distortion

Rated Power Output into 8 ohms ..... 0.005%

Intermodulation Distortion ..... 0.005%

Frequency Response ..... DC ~ 200 kHz

+0 dB, -3 dB

#### S/N Weighted: Rated Output Power (IEC-A)

( ) = Unweighted at 50 mW (DIN)

Phono MM ..... 88 dB (58 dB)

Phono MC ..... 69 dB

Tuner, Aux/D.A.D., Tape ..... 107 dB (58 dB)

Damping Factor at 8 ohms, 100 Hz ..... 1,000

#### Transient Response

Rise Time ..... 1.7  $\mu$ s

Slew Rate .....  $\pm 100$  V/ $\mu$ s

#### Input Sensitivity/Impedance

Phono MM ..... 2.5 mV/33/47/100 k $\Omega$

Phono MC ..... 0.2 mV/100  $\Omega$

Tuner, Aux/D.A.D., Tape ..... 150 mV/47 k $\Omega$

#### Tone Control

Bass 100 Hz .....  $\pm 10$  dB

Treble 10 kHz .....  $\pm 10$  dB

Loudness Control (-30 dB) ..... 100 Hz, +10 dB

Subsonic Filter ..... 18 Hz, 6 dB/oct.

## General

#### Power Consumption

IEC ..... 700 W

Dimensions ..... W: 440 mm

H: 143 mm

D: 383 mm

Weight (Net) ..... 10.7 kg